

**Contra Costa County
Community Development Department**

Date: April 4, 1995
To: Roberta Goulart, Water Agency
From: John Kopchik, intern
Re: The San Luis Drain

Origin and Purpose of the Drain

The San Luis Act of 1960 authorized the U.S. Bureau of Reclamation to provide irrigation service to the San Luis Unit, a 600,000 acre area of the San Joaquin Valley just west of Fresno. The plan of operation for this addition to the Central Valley Project included not only increased water diversion from the Delta and extension of the existing canal and reservoir system, but also specified construction of a network of buried pipelines to collect subsurface agricultural drain flows and a large canal or master drain to dispose of the drainage. The San Luis Act required the Bureau of Reclamation to either build its own master drain (referred to then as the San Luis Interceptor Drain) or to cooperate with the State of California on the construction of its proposed San Joaquin Valley Master Drain. Both projects had planned discharge points in the Delta near the City of Antioch.

The San Luis Act contains the specific agricultural drainage provisions described above because federal water planners realized that without proper drainage of excess subsurface flows, much of the land in and around the service area would quickly lose the ability to grow crops. The western San Joaquin Valley, and the area of the San Luis Unit in particular, have an extremely shallow groundwater table. It was expected that irrigation of such lands would elevate the groundwater table to the level of the crop root zone and decimate yields. Drainage of subsurface flows was seen as a complete solution to this problem. However, planners were not aware of the hazards subsurface drainage could present (in fact, as late as 1981, the State Water Resources Control Board was only prepared to issue discharge permits for subsurface drainage, concerned that surface drainage was much more polluted with pesticides and fertilizers). Their crucial oversight was that soils of the San Luis Unit and surrounding areas have very high levels of selenium. Though living organisms require small amounts of selenium to survive, levels of selenium even slightly higher than this are extremely toxic and readily concentrate when passing through the food web.

Construction History: A Series of Delays

Though construction of the San Luis Unit began in 1963 and water deliveries commenced five years after that, the drainage facilities approved in 1960 have yet to be completed. The state's Department of Water Resources twice committed then withdrew from plans to cooperatively develop the San Joaquin Valley Master Drain

with the Bureau of Reclamation, finally deciding in 1967 to scrap its drainage plans. The DWR's indecisiveness delayed progress on the drainage program for the San Luis Unit and prompted farmers downhill of the SLU--concerned about the potential of new upslope irrigation to exacerbate their own drainage problems--to sue the Bureau of Reclamation. The Bureau addressed their claims by initiating construction of its San Luis Drain (the word "interceptor" was dropped from the title) in 1968. Plans for the drain called for a 188 mile long concrete-lined canal from southern Fresno County to the Delta at Chipps Island. The drain was intended to serve the five water districts in the Unit (these include the enormous Westlands Water District in the south and four smaller water districts located farther north) and was to have the potential to accommodate drainage from other areas if necessary. The project was also to include construction of a regulating reservoir approximately 60 miles from the Delta near Gustine. In an attempt to recycle the drainage water in some way, the regulating reservoir was to be co-managed as a wetland by the U.S. Department of Fish and Wildlife and was to be called Kesterson National Wildlife Refuge. Construction of the drain was halted in 1975 due to the increasing opposition to Delta disposal as well as to a lack of funding (this lack of funding can be at least partially attributed to unbudgeted expenditures necessary to provide distribution to 156,000 acres illegally annexed by the Westlands Water District in the 1960s--these lands were specifically excluded from the San Luis Act of 1960 because of their poor soils and drainage). At the time the project was ceased, Kesterson had been constructed to one third its intended size, 85 miles of the San Luis Drain had been completed from Kesterson to the south, and only 120 of the 500 miles of collector drains, serving less than 10,000 of the 300,000 acres requiring drainage, were in place.

With construction of the drain halted, Kesterson's function changed from that of regulating reservoir to waste repository. Kesterson began receiving surface runoff through the drain as early as 1972, but it wasn't until January of 1981 that undiluted subsurface drainage was first discharged into Kesterson. In June of 1981, the Bureau of Reclamation discovered high selenium concentrations in the water, prompting a U.S. Fish and Wildlife Service study that found selenium levels in Kesterson's mosquitofish to be the highest ever recorded in a living fish. By 1983, high incidence of death and mutation among waterfowl embryos was observed and selenium was identified as the likely cause. The local print media began to write about the crisis in late 1983, but the agencies responsible for dealing with the problem were neither taking action to curb the degradation nor openly divulging information on conditions within the reservoir. In 1984, the U.S. Geological Service found levels of selenium in Kesterson significantly higher than those previously reported by the Bureau of Reclamation and identified specific sampling mistakes made by the Bureau. U.S. Fish and Wildlife Service studies of the same year reported almost a complete absence of waterfowl nesting

activities at Kesterson and documented the death of adult birds due to acute exposure to selenium. In February of 1985, the State Water Resources Control Board declared the water entering Kesterson to be a hazardous waste and ordered that a cleanup and abatement plan be submitted within five months. On March 10, 1985, Sixty Minutes aired a segment on the Kesterson debacle. Five days later, the Department of the Interior ordered a halt to the discharging of agricultural drainage into Kesterson.

In the aftermath of Kesterson crisis, progress on the resolution of San Luis Unit drainage problems was brought to a near standstill. The Bureau of Reclamation supervised the phased elimination of drain discharge into Kesterson in 1986 and also began the process of filling and cleaning the reservoir, but provided no plans to address the deteriorating drainage conditions within the service area. San Luis Unit farmers sued the Westlands Water District, who in turn sued the Bureau of Reclamation, and, in late 1986, the plaintiffs won a court order requiring the Bureau of Reclamation to submit a drainage plan by the end of 1991. The Bureau of Reclamation complied with the ruling, which has come to be known as the Barcellos Judgment, and in 1991 submitted a Draft Environmental Impact Statement for the San Luis Unit Drainage Program which recommended a combination of measures to minimize drain flows, use developing technologies to treat and reuse what drainage cannot be avoided, and dispose of remaining waste products in landfills and the San Joaquin River. The Bureau of Reclamation took no action to implement the E.I.S. and was sued again by Westlands. In December of 1994, Judge Oliver Wanger of the U.S. District Court ruled that the Bureau of Reclamation had illegally neglected its responsibility to provide drainage for the San Luis Unit. The judge rejected the Bureau of Reclamation's impossibility defense, finding that the Bureau must at least apply for a waste discharge permit before concluding that environmental laws like the Clean Water Act and the Migratory Bird Treaty Act made it impossible to obtain one. However, the judge refused to require a Delta outfall, ruling that the San Luis Act of 1960 is ambiguous with respect to this issue, and left designation of the drain discharge location up to the Secretary of the Interior and the U.S. Congress.

The Future of the Project

If the Bureau of Reclamation chooses to comply with the Wanger decision (as of March 1995, they have yet to state publicly what their response will be), the alternative drainage plans outlined in the 1991 Draft Environmental Impact Report will bear further scrutiny as potential options for compliance with the court order. The Draft Environmental Impact Statement eliminated both direct Delta disposal and ocean disposal as viable alternatives because the Bureau of Reclamation believed both options would have environmental consequences that would be unacceptable both to regulators and the public, and because ocean disposal was considered too costly. The five alternatives considered in detail by the report, including the Bureau's favored alternative (#5), are

summarized below. These alternative drainage proposals vary greatly in their approach to the drainage problem--one plan completely eliminates disposal by utilizing source control measures, while another contains nothing but disposal provisions. Several of the alternatives would discharge some drainage directly into the San Joaquin River, but in all cases the primary means of disposal involves removing and landfilling the solids dissolved in drain water and implements river disposal only for lands where such discharges are already occurring.

Alternative 1--No Action This alternative was included in the report as a point of reference by which the other alternatives could be judged. If no federal drainage program is implemented, the Bureau predicts that drainage conditions would deteriorate, forcing some lands out of production and reducing yields on others, and that the area of land facing drainage problems would grow. Drainage from the northern water districts would continue to flow into the San Joaquin River and water quality in the river and its tributaries would generally be worse in 2007 than it is today. Every other alternative, however, is expected to improve water quality in the river.

Alternative 2--Disposal For the Westlands Water District, this proposal would entail construction of new drainage collection systems, extension of the San Luis Drain to the South, development of evaporation ponds to remove dissolved solids, and construction of a landfill for final disposal of the solid wastes. The four northern districts would be provided with new facilities to dispose of subsurface drainage into the San Joaquin River, including a small northern extension of the San Luis Drain, and with new subsurface drainage recycling facilities to permit some reuse of the drain water for irrigation.

Alternative 3--Source Control This alternative would reduce the flow of drainage from irrigated lands and recycle all drainage that is collected to completely eliminate the need for waste disposal. Source control measures would include taking the lands with the worst drainage problems out of production, using irrigation water more efficiently, and reducing seepage from distribution canals.

Alternative 4--Source Control and Disposal This drainage proposal is essentially the same as Alternative 3, except that it makes provision for some drainage disposal into the San Joaquin River by the northern water districts.

Alternative 5--Source Control and New Technologies This drainage plan, the Bureau of Reclamation's preferred alternative, would make use of source control measures to address farmer's drainage problems until potentially useful new techniques for treating and managing agricultural waste could be implemented. The new techniques mentioned include solar ponds (which could remove dissolved solids from drain water while simultaneously generating

electricity), cogeneration (using agricultural drainage as the water supply in a power plant, desalinating the drain water while also contributing to the generation of electricity), treatment of subsurface drainage to remove selenium, and water marketing to encourage conservation as well as retirement of lands with severe drainage problems.

The drainage options described above face several obstacles which may prevent their implementation. Those alternatives which employ source control measures, including the Bureau's preferred alternative, will meet with strong resistance from farmers because they are not eager to take land out of production, use irrigation water more sparingly, or otherwise risk diminished yields. Likewise, it is not certain that any of these alternatives would satisfy the requirements of the Wanger ruling because the judge, although refusing to select a discharge point, specifically ordered the Bureau to comply with the San Luis Act and complete the San Luis Drain.

One other potential program for disposing of agricultural waste from the San Luis Unit which is not described in the Draft EIS and is still only in its infancy bears mentioning. The basic concept is to swap agricultural drainage from the San Joaquin Valley for highly treated urban sewage from the Bay Area. Under this scheme, farmers would use urban waste water to irrigate their fields and then pump the drainage west for ocean disposal either near San Francisco or Monterey Bay. The Bay Area water districts which distribute nearly pristine Sierra runoff to their customers (primarily, the San Francisco Water District and EBMUD) are feeling some pressure to see this water reused. SFWD and EBMUD are also hopeful that water savings farmers generate by using recycled rather than federal water might allow SFWD and EBMUD to increase their potable water supplies. An organization called the Central California Regional Water Recycling Project has been established to further study this idea.

Where Other Organizations Stand on the Issue

Contra Costa Water District CCWD has long opposed the drain. If the plan to discharge in the Delta goes forward, they will be "investing resources" to resist it. (contact: Art Jensen)

Central Valley Regional Water Quality Control Board The CVRWQCB would issue a discharge permit for either Delta or San Joaquin River disposal, but would require a selenium standard that was so stringent that the Bureau would most likely lack the funds to pay for treatment. The CVRWQCB is closely following the progress of the waste swap idea. (contacts: Loni Wass, Dennis Wescott, Les Gerber)

Sierra Club The Club strongly opposes Delta disposal. They generally oppose the waste swap idea because of its potential for growth inducement and because of the uncertain consequences of ocean disposal. The club feels the best solution is to take

dangerous lands out of production. (contacts: Julia Bott, David Nesmith, George Whitmoore)

Environmental Defense Fund The EDF will help the Bureau appeal the Wanger decision if they choose that option. They have been negotiating with farmers and advocating a drainage solution that makes farmers accountable for their own waste. The EDF believes that Ocean Disposal carries unknown risks and that the waste swap idea is unrealistic. (contact: Terry Young)